



The Impact of Climate Change Anxiety and Coping Strategies on Psychological Well-Being Among University Students in Flood-Affected Areas

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Abstract: Climate change is recognized as a significant psychological stressor, particularly for university students who are navigating academic demands and future career uncertainties in the context of environmental instability. This study examines the relationship between climate change anxiety, coping strategies, and psychological well-being among university students (N100) aged 21-40 in the Buner and Swat districts of Pakistan. A quantitative, cross-sectional correlational research design was employed. Data were collected using standardized measures, including the Climate Change Anxiety Scale and Ryff's Psychological Well-Being Scale, along with a coping strategies measure. The study hypothesizes that climate change anxiety will be negatively associated with psychological well-being while coping strategies will be positively associated with psychological well-being. Additionally, climate change anxiety is expected to be positively associated with coping strategies. The findings aim to provide insight into how university students respond psychologically to climate-related stress and to contribute to the development of mental health and resilience-based interventions in academic settings.

Introduction

Climate change is increasingly recognized as one of the most significant challenges of the 21st century, with profound consequences not only for the natural environment but also for human health and psychological well-being (Lawrance et al., 2022; Clayton, 2020). While much attention has been paid to its ecological and economic impacts, the psychological effects of climate change are emerging as a critical area of concern. The Intergovernmental Panel on Climate Change (IPCC) and the World Health Organization (WHO) have stressed that climate change is a serious public health emergency in addition to an environmental problem.

As a "risk multiplier," it exacerbates pre-existing social and psychological vulnerabilities and affects mental health along a spectrum from more general declines in emotional well-being to clinical problems (Charlson et al., 2021). In addition to its physical effects, climate warming can also result in substantial psychological distress that shows up as anxiety, dread, grief, rage, or even existential despair (Clayton et al., 2017; Hickman et al., 2021). This psychological reaction, which reflects emotional, cognitive, behavioral, and physical reactions to real or perceived dangers from environmental change, has been

referred to in the literature as climate change anxiety, eco-anxiety, or climate-related anxiety (Pihkala, 2020; Clayton, 2020).

According to Akerlof et al. (2015) and Cianconi et al. (2021), climate anxiety in these areas is exacerbated by direct exposure, which lowers the psychological distance between the individual and the global environmental disaster and frequently results in increased levels of hypervigilance and emotional tiredness. As a result, the possibility of frequent flooding acts as a constant reminder of climatic vulnerability, which may jeopardize impacted people's long-term psychological stability.

Climate-related anxiety is an actual and palpable stressor for those living in flood-affected areas, not a theoretical or distant concern. Flooding is a unique type of psychological trauma in places like Buner and Swat, characterized by displacement and solastalgia—the distress brought on by the detrimental alteration of one's home environment. The "psychological distance" that is usually connected to global issues collapses under these situations. Because the natural environment is seen as a source of danger rather than security, the threat of seasonal monsoons causes a state of continuous hypervigilance and mental exhaustion.

In milder forms, climate anxiety shows real concern for ecological deterioration and may inspire people to participate in social activism, pro-environmental behavior, and group efforts to slow down climate change (Ojala & Bengtsson, 2019; Pihkala, 2020). However, when this nervousness becomes excessive, persistent, or overwhelming, it can have a detrimental impact on mental health, resulting in diminished psychological resilience, emotional weariness, depression, and generalized anxiety (Hickman, 2020; Mah et al., 2020).

Due to their increased awareness of climate issues, exposure to climate-related education, and concern over the uncertain future they face, young people—especially university students and adolescents—are among the most vulnerable groups (Ojala, 2012a; Maran & Begotti, 2021; Daeninck et al., 2023). According to research, climate anxiety has a widespread effect on psychological well-being and can affect significant life decisions like family formation, financial decisions, and career planning (Schneider-Mayerson, 2022; Smith et al., 2022).

Anxiety over climate change is increasingly seen as a rational, non-pathological response to environmental deterioration. When this discomfort is moderate, it can spur civic engagement and pro-environmental action. However, these emotional reactions can cause serious psychological damage, including feelings of generalized anxiety and depression, if they persist. Due to their high degree of ecological consciousness and existential anxiety about their future personal and professional life, university students are especially vulnerable.

Psychological Well-Being

A person's entire mental health, which includes social, emotional, and cognitive facets of life, is represented by psychological well-being. Positive emotions, life satisfaction, personal development, autonomy, and a sense of purpose are all part of it (Ryff, 1989; Diener et al., 2018).

Both directly and indirectly, psychological well-being may be threatened by climate change. Exposure to extreme weather events, such as heat waves, floods, hurricanes, and wildfires, has direct effects and is linked to long-term psychological trauma, depression, and post-traumatic stress disorder (PTSD) (Hayes et al., 2018; Charlson et al., 2021). The awareness of environmental deterioration causes existential concern, ecological sadness, and anticipatory anxiety, all of which have indirect effects.

The interconnectedness of mental health and climate change as global crises necessitating coordinated public health interventions is further highlighted by recent multidisciplinary study (Lawrance et al., 2022). Although the physical health implications of climate change were the main focus of early talks,

there is growing evidence that psychological repercussions can occur through both direct and indirect channels. These effects go beyond those who are directly impacted by catastrophes and may have an impact on larger populations due to perceived and expected environmental risks to Earth's continued existence (Ojala et al., 2021; Clayton & Karazsia, 2020).

According to Akerlof et al. (2015) and Schwartz et al. (2023), climate anxiety and its effects on psychological well-being can be widespread and extensive. Even people who have not personally experienced climate-related disasters may experience distress due to media exposure or awareness of global ecological crises.

People's psychological health can be greatly impacted by how they react to climate fear. In order to manage the stress and emotional strain brought on by climate change, coping mechanisms are essential. In general, there are three types of coping strategies: problem-focused, emotion-focused, and meaning-focused (Ojala & Bengtsson, 2019; Šski, 2019).

According to Ojala (2013) and Lazarus & Folkman (1984), problem-focused coping entails taking concrete actions to mitigate or solve environmental hazards, such as adopting sustainable practices, obtaining information, or taking part in climate action activities. Through avoidance, denial, or diversion, emotion-focused coping aims to control the upsetting emotions linked to climate anxiety. While this may offer short-term respite, it may worsen long-term psychological discomfort (Ojala, 2013; Kelly, 2017). Meaning-focused coping places a strong emphasis on preserving hope, discovering purpose, and cultivating a feeling of group efficacy in order to help people remain resilient in the face of environmental difficulties (Folkman, 1997; Ojala, 2012a).

Research on the relationship between coping mechanisms, psychological well-being, and climate change anxiety is intricate and crucial. Adaptive coping, especially problem-focused and meaning-focused techniques, may be encouraged by moderate levels of climate anxiety, which can safeguard and improve psychological well-being. On the other hand, excessive anxiety or a dependence on unhealthy emotion-focused coping strategies can exacerbate discomfort, resulting in decreased well-being and increased emotional susceptibility (Ojala, 2013; Mah et al., 2020).

These interactions are especially pertinent to university students, who are negotiating important educational and developmental transitions while being exposed to more and more knowledge about climate change. Supporting young adults as they face ecological uncertainty requires an understanding of how students experience climate anxiety and which coping mechanisms preserve or restore well-being.

With an emphasis on how various coping strategies—problem-focused, emotion-focused, and meaning-focused—may affect this relationship, this study attempts to investigate the effects of climate change anxiety on psychological well-being among college students. By looking at these factors collectively, the study aims to offer a thorough understanding of how mental health is impacted by climate-related suffering and how young adults deal with the psychological difficulties brought on by the global climate crisis.

Literature Review

As a "risk multiplier" that intensifies pre-existing psychological and social vulnerabilities, climate change is increasingly acknowledged as a crucial factor influencing global public health (Lawrance et al., 2022; Charlson et al., 2021). This crisis coincides with a developmental stage marked by identity exploration and future-focused decision-making for university students, especially those in emerging adulthood, increasing psychological strain (Arnett, 2000).

Mental health is impacted by climate change in both direct and indirect ways. Direct channels include direct exposure to natural disasters like heat waves, droughts, and floods, which can cause stress, anxiety, and trauma. On the other hand, indirect routes function through anticipatory processes, such as media exposure, ecological deterioration awareness, and future uncertainty (Cianconi et al., 2021). These pathways contribute to emotional reactions including ecological grieving, which reflects a sense of loss connected to environmental change, and eco-anxiety, which is a persistent worry of environmental disaster.

Students who live in flood-prone areas have a much smaller psychological distance from climate change. Frequent exposure to flooding causes solastalgia, a type of distress brought on by an unwelcome change in one's home environment that disrupts emotional security and place-based identity (Albrecht, 2011).

The Role of Meaning-Focused Strategies in Environmental Adaptation

By reframing climate-related concerns in a more positive and value-driven way, this technique helps people preserve psychological equilibrium and a feeling of purpose. Optimism, faith in group efforts, and sustained involvement with environmental issues are frequently associated with meaning-focused coping. Depending on individual variations, perceived control, and the type of environmental stressors, these tactics may or may not be helpful. Examining how people mentally adjust to climate-related difficulties and how these tactics connect to general psychological well-being requires an understanding of these coping mechanisms.

Relationship between Climate Change Anxiety and Psychological Well-Being

Persistent concern, fear, and emotional discomfort associated with environmental threats are referred to as climate change anxiety (CCA) (Clayton, 2020; Pihkala, 2020). Crucially, it is a reasonable reaction to actual and existential environmental threats rather than being intrinsically abnormal. However, it can significantly impact psychological well-being by impairing everyday functioning and emotional regulation when it is persistent or overwhelming.

Carol Ryff's eudaimonic framework states that aspects of psychological well-being include personal development, purpose in life, and environmental mastery. Anxiety over climate change may compromise these aspects in a number of ways. First, it undermines environmental mastery because people's perceived capacity to control their environment is diminished by the unpredictable and frequent character of climate-related occurrences, especially flooding. Feelings of powerlessness and diminished psychological stability could result from this lack of control (Cianconi et al., 2021).

Second, especially for young adults involved in long-term planning, climate concern has an existential impact on life's meaning. According to research, increased concern about climate change can lead to a feeling of "future lessens," which lowers motivation to achieve personal, professional, and familial objectives (Hickman et al., 2021)

Coping Strategies in the Context of Climate Change Anxiety

According to the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984), coping strategies are the behavioral and cognitive techniques people employ to deal with stress and emotionally taxing circumstances. Coping methods are important in determining how people react to perceived dangers and environmental stresses in the context of climate change.

Both direct and indirect climate-related stresses, such as environmental deterioration, extreme weather occurrences, and future uncertainty, are experienced by university students, especially those who live in climate-vulnerable areas. People use various coping mechanisms to control their emotional experiences and preserve psychological functioning in response to these difficulties.

Problem-focused coping, emotion-focused coping, and meaning-focused coping are the three primary categories into which coping responses to climate-related stress are typically divided (Ojala, 2012a). Each of these tactics has unique psychological ramifications and represents a distinctive method of handling environmental stress. The cognitive effort to find meaning and hold onto hope in the face of seemingly insurmountable environmental problems is known as meaning-focused coping. By reframing climate hazards through the prism of their basic beliefs and a confidence in collective efficacy, people employ this method instead of disregarding the issue. This strategy is essential for psychological balance because it enables pupils to maintain their optimism and engagement despite the severity of the global crisis.

Active involvement with the stressor through doable actions, such as taking part in environmental projects, embracing sustainable behaviors, or looking for ways to reduce climate-related hazards, is known as problem-focused coping. This strategy demonstrates behavioral engagement and a sense of personal agency in tackling environmental issues. Instead of addressing the stressor directly, emotion-focused coping focuses on controlling emotional reactions to stress. This could involve tactics like diversion, denial, or avoidance. Such tactics might offer momentary mental respite, but they might not adequately address underlying climate change-related issues.

Coping Strategies and Psychological Well-Being

Meaning-focused coping serves as a resilience mechanism, allowing people to find meaning and preserve psychological stability in the face of environmental hardship (Ojala, 2013). A positive psychology viewpoint can help us better understand this adaptation process. According to Luthans et al. (2007), meaning-focused coping helps build Psychological Capital (PsyCap), a multifaceted concept that includes optimism, hope, resilience, and self-efficacy.

Despite persistent climate problems, these psychological resources serve as protective factors, allowing people to effectively handle environmental stresses and retain well-being (Lawrance et al., 2022). In this sense, coping mechanisms actively develop the internal resources required for long-term adaptation rather than just lessening suffering.

According to Albert Bandura's theory, those who have higher levels of perceived self-efficacy are better able to deal with environmental difficulties. Environmental self-efficacy improves environmental mastery and lessens emotions of powerlessness in the context of climate change, especially for people who are subjected to frequent climate events like flooding.

Additionally, by encouraging present-focused awareness, mindfulness-based techniques may aid with emotional regulation by enabling people to process suffering without feeling overwhelmed.

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Research Gap

There are still a number of significant gaps in the growing body of research on climate change anxiety. Previous research has mostly concentrated on negative psychological outcomes, while positive psychological well-being from a eudaimonic perspective has received comparatively little attention. Additionally, the combined influence of climate anxiety and coping strategies on psychological well-being has not been thoroughly examined.

Furthermore, the majority of research has been conducted on general populations, with limited attention paid to individuals living in climate-vulnerable areas. Recurrent exposure to environmental risks may intensify psychological reactions and alter coping strategies among students residing in flood-prone locations.

Therefore, research that concurrently examines climate change anxiety, coping strategies, and psychological well-being in a university population exposed to climate-related threats is necessary. Addressing this gap will contribute to a more comprehensive understanding of how environmental distress and psychological processes interact to influence the well-being of emerging adults.

Theoretical Framework

The present study is grounded in the Transactional Model of Stress and Coping proposed by Lazarus and Folkman (1984), which explains that psychological stress is a result of the dynamic interaction between individuals and their environment. According to this model, stress does not arise solely from external events but from individuals' cognitive appraisal of those events and their perceived ability to cope with them. In the context of climate change, university students may perceive environmental threats such as flooding, environmental degradation, and climate uncertainty as significant stressors. Their psychological response depends on how they evaluate these threats and the coping strategies they adopt. Coping strategies are generally categorized into problem-focused coping, emotion-focused coping, and meaning-focused coping. Problem-focused coping involves taking practical actions to address environmental challenges and reduce stressors directly, while emotion-focused coping aims to regulate emotional distress through avoidance, denial, or distraction. Meaning-focused coping involves cognitive strategies such as positive reappraisal, hope, and finding meaning in difficult circumstances. According to the model, these coping strategies determine whether climate-related stress leads to psychological distress or psychological adaptation and resilience.

The study is also informed by Ryff's Eudaimonic Theory of Psychological Well-Being (Ryff, 1989), which conceptualizes well-being as a multidimensional construct comprising autonomy, environmental mastery, personal growth, purpose in life, self-acceptance, and positive relations with others. This framework emphasizes that psychological well-being extends beyond the absence of mental illness and reflects optimal psychological functioning and fulfillment. Climate change anxiety may negatively affect these dimensions by increasing uncertainty about the

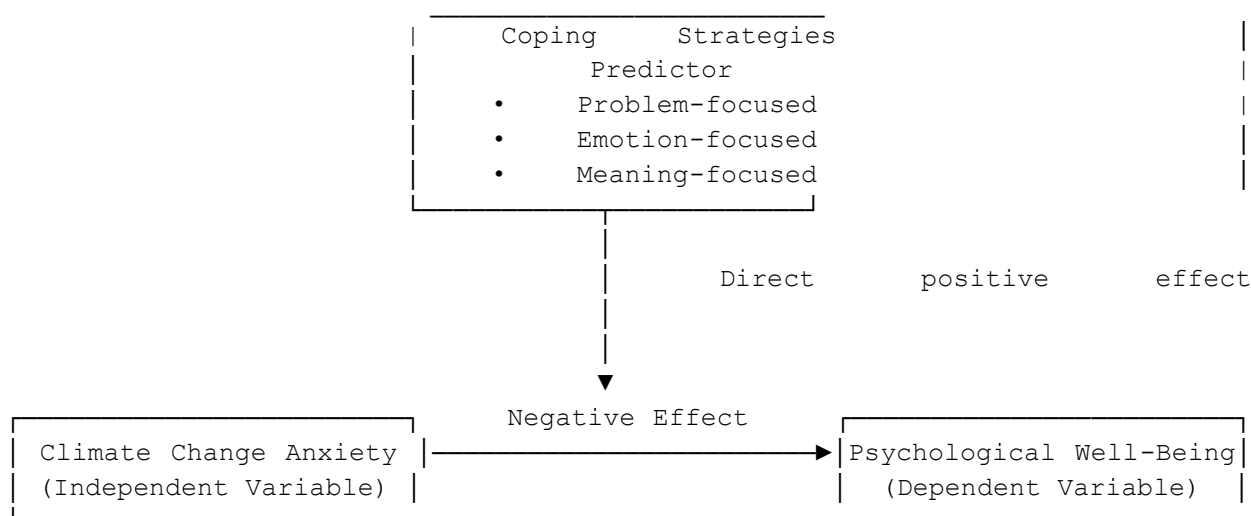
future, reducing perceived environmental control, and weakening individuals' sense of purpose and security. For university students, particularly those in climate-vulnerable regions, repeated exposure to environmental threats may further reduce emotional stability, hinder future orientation, and limit their sense of environmental mastery and autonomy.

Empirical evidence supports these theoretical assumptions. Ojala (2012) found that adolescents who used meaning-focused coping strategies such as hope, optimism, positive reappraisal, and trust in collective action reported higher levels of psychological well-being despite experiencing climate-related worry. This suggests that adaptive coping strategies may buffer the negative psychological effects of climate anxiety. Similarly, Hickman et al. (2021) reported that higher levels of climate-related distress were associated with increased anxiety, hopelessness, and reduced psychological functioning among young people, particularly those who felt powerless in relation to environmental change. These findings highlight the psychological burden of climate anxiety and the importance of coping mechanisms in shaping emotional outcomes.

Based on these theoretical perspectives and empirical findings, the present study assumes that climate change anxiety acts as a psychological stressor that negatively influences psychological well-being among university students. At the same time, coping strategies—particularly adaptive forms such as problem-focused and meaning-focused coping—are expected to function as protective factors that enhance resilience and psychological well-being. In contrast, maladaptive coping strategies such as avoidance and emotion-focused disengagement may increase psychological distress and reduce well-

being. Thus, coping strategies play a central predicting role in understanding how climate change anxiety impacts the psychological well-being of university students in climate-vulnerable context.

Conceptual Framework



Rationale

The escalating climate crisis is no longer just an ecological threat; it has evolved into a significant driver of psychological distress, particularly among university students. This demographic is uniquely susceptible as they navigate the transition into adulthood while being constantly bombarded with climate-related information through academic and social media channels. While existing literature has documented the rise of "eco-anxiety," there remains a critical shortage of empirical data regarding how this distress impacts the eudaimonic dimensions of well-being, such as personal growth and life purpose. Furthermore, there is a lack of clarity on how specific cognitive responses—namely problem, emotion, and meaning-focused coping—act as predictors of psychological health. This study addresses these gaps by exploring how these variables interact within student populations residing in flood-vulnerable regions.

Problem Statement

While climate change anxiety is increasingly recognized as a global health concern, the mechanisms through which it influences the long-term psychological well-being of students remain under-researched. Many institutions acknowledge the distress but lack the evidence-based data required to support students effectively. Current research often focuses on general anxiety symptoms rather than examining how adaptive coping strategies can protect a student's sense of autonomy and environmental mastery. Without a clear understanding of which coping mechanisms are most beneficial, university support systems remain unequipped to foster resilience in the face of localized environmental threats like recurrent flooding.

Research Objectives

- I. To examine the relationship between climate change anxiety and psychological well-being among university students aged 21–40 years.
- II. To examine the relationship between coping strategies and psychological well-being among university students aged 21–40 years.

Hypothesis

- I. Climate change anxiety significantly predict psychological well-being among university students.
- II. Coping strategies is significantly positively associated with psychological well-being among university students.
- III. Climate change anxiety is significantly positively associated with coping strategies among university students

Methodology**Research Design**

This study employed a quantitative, cross-sectional correlational research design to examine the relationship between climate change anxiety, coping strategies, and psychological well-being among university students. The design allows for the analysis of relationships between variables at a single point in time without manipulation of variables.

Sample

The sample consisted of 100 university students aged 21–40 years from flood-affected regions of Buner and Swat, in Pakistan. Participants were selected using a purposive sampling technique, based on predefined inclusion criteria to ensure relevance to the study objectives.

Inclusion Criteria

- University students enrolled in undergraduate or postgraduate programs
- Age between 21 and 40 years
- Residents of flood-prone or flood-affected areas (Buner and Swat)
- Willingness to participate and provide informed consent

Exclusion Criteria

- Non-university students
- Individuals outside the age range
- Incomplete questionnaire responses
- Participants unwilling to consent

Data Collection Method

Data were collected using an online questionnaire survey. The questionnaire was developed in Google Forms and distributed through email and university networks. Participants accessed the survey link voluntarily and completed the measures anonymously.

Before participation, respondents were informed about the purpose of the study, confidentiality of responses, and their right to withdraw at any time

Instruments

- Climate Change Anxiety Scale (Clayton & Karazsia, 2020)
- Psychological Well-Being Scale (Ryff, 1989)
- Coping Strategies Scale based on Ojala's Framework

Operational Definition**Climate Change Anxiety**

Climate change anxiety in this study is measured using the Climate Change Anxiety Scale (CCAS) developed by Clayton and Karazsia (2020), a standardized self-report instrument designed to assess emotional, cognitive, and functional distress related specifically to climate change. The scale consists of 22 items rated on a 5-point Likert scale ranging from *strongly disagree* to *strongly agree*. Climate change anxiety is operationally defined as the total score obtained on the CCAS, with higher scores indicating

higher levels of climate-related anxiety among university students. The CCAS has demonstrated strong psychometric properties, with reported Cronbach's alpha values above 0.80, indicating high internal consistency, and has been widely used in studies examining climate-related psychological distress, supporting its construct validity.

Psychological Well-Being

Psychological well-being is assessed using Ryff's Psychological Well-Being Scale (PWB), which measures positive psychological functioning across six dimensions: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. The scale consists of 18 items rated on a 6-point Likert scale ranging from *strongly disagrees* to *strongly agree*. In this study, psychological well-being is operationally defined as the total score obtained on the Psychological Well-Being Scale, with higher scores reflecting higher levels of well-being among university students. The scale has demonstrated good reliability across diverse populations, with Cronbach's alpha coefficients typically ranging from 0.70 to 0.90, and is supported by extensive evidence of construct and theoretical validity.

Coping Strategies

Coping strategies related to climate change are measured using a self-report questionnaire developed based on Ojala's (2012a) coping framework, which conceptualizes coping as comprising three distinct dimensions: problem-focused coping, emotion-focused coping, and meaning-focused coping. The instrument consists of 28 items rated on a 5-point Likert scale ranging from 1 (Never) to 5 (Always).

Problem-focused coping refers to active efforts to address climate-related issues through information seeking, environmental action, and engagement in solutions. Emotion-focused coping involves strategies aimed at regulating emotional distress associated with climate change, such as avoidance, denial, or emotional expression. Meaning-focused coping reflects the ability to maintain hope, optimism, and a sense of purpose by finding positive meaning and constructive perspectives in response to climate-related concerns.

Scores are calculated separately for each subscale by summing or averaging the relevant items. Higher scores indicate greater use of the corresponding coping strategy. The multidimensional structure of the instrument is consistent with Ojala's theoretical framework and allows for the assessment of distinct cognitive, emotional, and behavioral responses to climate change.

Evidence for the validity of the coping measure has been demonstrated through strong theoretical grounding, construct validity, and convergent validity in studies examining adolescents' and university students' responses to climate-related stress. Previous research has shown that the three-factor structure adequately represents climate-related coping processes and is associated with psychological outcomes such as environmental engagement, well-being, optimism, and climate anxiety. Reliability analyses have reported acceptable to good internal consistency for the subscales, with Cronbach's alpha coefficients generally exceeding .70, indicating satisfactory reliability for research purposes..

Procedure

Participants were recruited from universities in flood-affected regions through email invitations and online platforms. A screening section ensured that only eligible participants (university students from flood-prone areas) could proceed with the questionnaire.

After accessing the online link, participants completed the survey voluntarily. Informed consent was obtained at the beginning of the questionnaire. All responses were kept confidential and used only for research purposes.

Data Analysis

Data were analyzed using SPSS. Pearson correlation, and multiple regression analysis is conducted.

Ethical Considerations

- Informed consent was obtained from all participants
- Participation was voluntary
- Confidentiality and anonymity were ensured
- Participants had the right to withdraw at any time
- Data were used strictly for academic purposes

Significance of the Study

This study holds both theoretical and practical significance. Theoretically, it addresses a critical gap by shifting the focus from mere psychological distress to a "eudaimonic" perspective of well-being, exploring how climate anxiety interacts with personal growth and life purpose. It also advances the application of the Transactional Model of Stress and Coping within the context of environmental disasters. Practically, the findings will provide evidence-based insights for university mental health professionals and policymakers. By identifying which coping strategies (such as meaning-focused coping) are most effective at buffering anxiety, institutions can develop targeted resilience-building workshops and support frameworks tailored to students in climate-vulnerable regions.

Results

Table 1

Frequencies and percentages of demographic variables of Study (N = 100)

Variables	Category	<i>f</i>	%
Gender of the Students	Female	53	53%
	Male	47	47%
Education of the Students	Graduate	29	29%
	Undergraduate	41	41%
	MPhil	30	30%
Age of the Students	21-25	47	47%
	26-30	19	19%
	31-35	27	27%
	36-40	7	7%
Residential Area of the Students	Buner	61	61%
	Dir	3	3%
	Swat	14	14%
	Swabi	22	22%

The results showed that the majority of participants were female students (53%), while male students comprised (47%)of the sample. Most participants were undergraduate students (41%), followed by MPhil (30%) and graduate students (29%). The majority of students belonged to the age group of 21–25 years (47%). Most participants were from Buner (61%).

Table 2*Psychometric Properties of the Study Major Variables/Scales (N=100)*

Variables	k	α	M (SD)	Range		Skew	Kurt
				Potential	Actual		
			77.3(6.55)	22-110			
CCAS	22	.80			60-96	-.045	.714
CSS	28	.70	78.0(5.8)	28-112	58-89	-.594	.548
PWBS	18	.70	73.8(9.3)	18-126	41-91	-.893	1.849

The findings indicated satisfactory reliability for all study scales. The Climate Change Anxiety Scale showed good reliability ($\alpha = .80$), while the Coping Strategies Scale and Psychological Well-Being Scale demonstrated acceptable reliability ($\alpha = .70$ each). The skewness and kurtosis values indicated that the data were approximately normally distributed.

Table 3*Correlation of study variables (N=100)*

Variables	CAS	CSS	PWBS
1 Climate Change Anxiety scale	1	.187	-.143
2 Coping Strategies scale	.187	1	.581**
3 Psychological well being scale	-.143	.581**	1

Note. ***p < .001, **p < .01, *p < .05

This hypothesis shows that climate change anxiety had a weak negative relationship with psychological well-being ($r = -.143$). Therefore, the hypothesis was partially supported.

This hypothesis shows that coping strategies had a significant positive relationship with psychological well-being ($r = .581$, $p < .01$). Therefore, the hypothesis was supported.

This hypothesis shows that climate change anxiety had a weak positive relationship with coping strategies ($r = .187$); however, the relationship was statistically non-significant. Therefore, the hypothesis was not supported.

Table 4*Multiple Regression Analysis**Model Summary*

R	R ²	Adjusted R ²	F	p
.403	.391	.391	32.77	<.001

a. predictors(constant) :CS,CA

b. Dependent variable : PWB

This hypothesis shows that climate change anxiety and coping strategies significantly predicted psychological well-being among university students. The regression model explained 39.1% variance in psychological well-being ($R^2 = .391$).

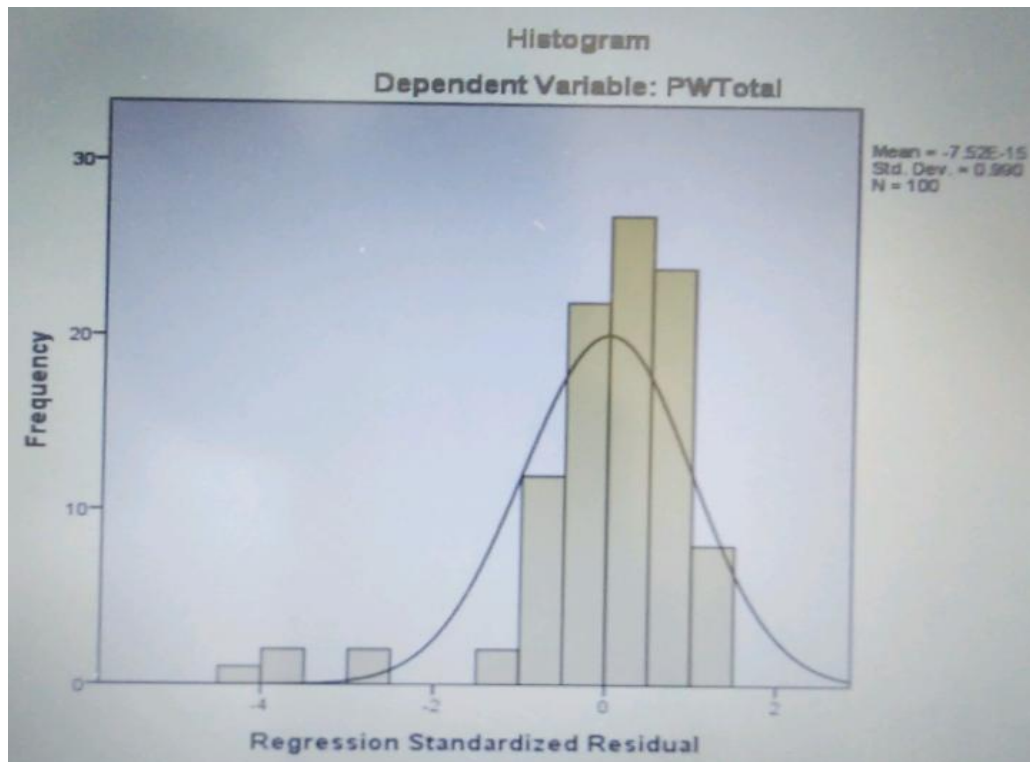
Table 5*Coefficients*

Predictor	B	SEB	β	t	p
Constant	424.93	125.36	—	3.39	.001
Climate change anxiety	-4.08	1.25	-.26	-3.26	.002
Coping strategies	1.47	0.19	.63	7.89	<.001

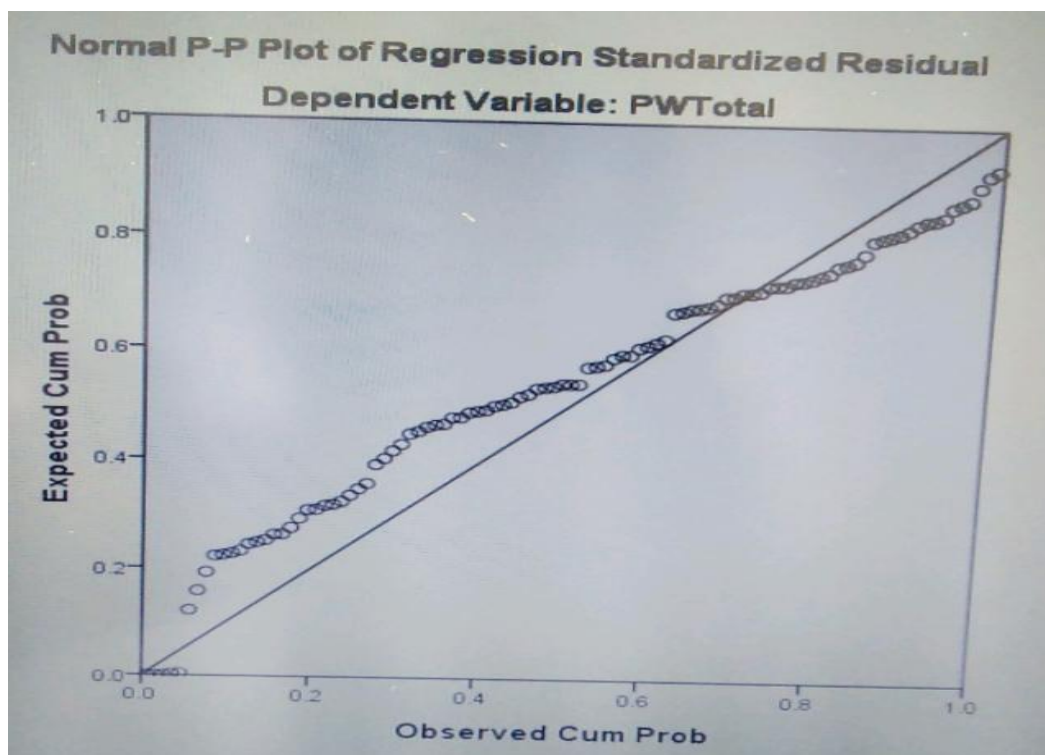
a: Dependent variable:PWB

This hypothesis shows that climate change anxiety significantly negatively predicted psychological well-being ($\beta = -4.08$, $p = .002$). Therefore, the hypothesis was supported.

This hypothesis shows that coping strategies significantly positively predicted psychological well-being ($\beta = 1.47$, $p < .001$). Therefore, the hypothesis was supported.

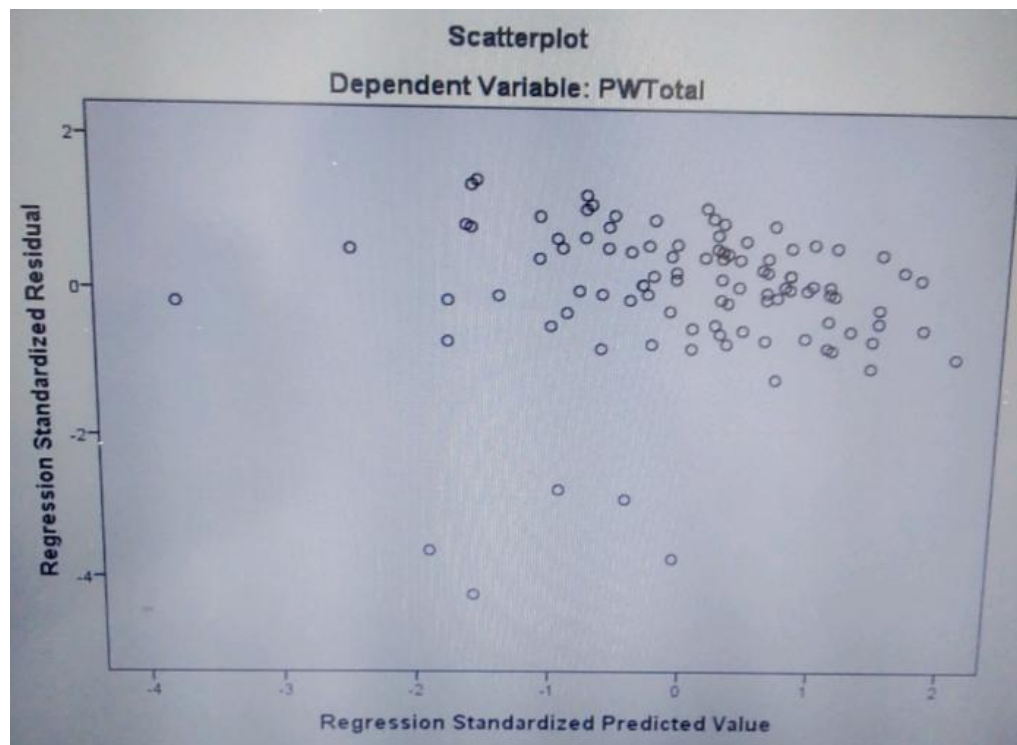


The histogram of standardized residuals for Psychological Well-Being (PWTotal) showed a mean close to zero and an approximately normal distribution, indicating that the assumption of normality of residuals was met.



The Normal P-P Plot of regression standardized residuals for Psychological Well-Being (PW Total) showed that the observed values closely followed the expected diagonal line, indicating that the

residuals were approximately normally distributed. This confirms that the assumption of normality for regression analysis was met.



The scatterplot of standardized residuals against standardized predicted values for Psychological Well-Being (PWTTotal) showed a random distribution of points around the horizontal line without any clear pattern. This indicates that the assumptions of linearity and homoscedasticity were satisfied, confirming the appropriateness of the regression model.

Discussion

The present study examined the relationship between climate change anxiety, coping strategies, and psychological well-being among university students. Overall, the findings indicated that climate change anxiety negatively predicts psychological well-being, whereas coping strategies positively predict psychological well-being and serve as a protective factor against climate-related psychological distress. The findings provided important insights into the psychological impact of climate-related concerns on young adults and highlighted the protective role of coping strategies in maintaining mental well-being. The demographic findings revealed that the majority of participants were female students (53%), while male students comprised 47% of the sample. Most participants were undergraduate students (41%), followed by MPhil (30%) and graduate students (29%). In terms of age, the majority of students belonged to the 21–25 years group (47%), and most participants were from Buner (61%). These findings indicate that the sample mainly consisted of young adults who are more exposed to environmental issues through education, media, and social discourse, and previous literature suggests that young individuals are more vulnerable to climate-related psychological distress due to increased awareness of global environmental challenges.

The psychometric properties of the scales used in the study demonstrated satisfactory reliability, and skewness and kurtosis values indicated that the data were approximately normally distributed, confirming the suitability of parametric analysis. Further supporting this assumption, the histogram of

standardized residuals for Psychological Well-Being (PWTot) showed a mean close to zero and an approximately normal distribution, indicating that the assumption of normality of residuals was met. In addition, the Normal P–P Plot of regression standardized residuals showed that the observed values closely followed the expected diagonal line, confirming that the residuals were approximately normally distributed and further validating the assumption of normality required for regression analysis.

The first hypothesis stated that climate change anxiety significantly predicts psychological well-being, and the findings showed a weak negative correlation between climate change anxiety and psychological well-being ($r = -.143$). Although this relationship was weak and non-significant at the correlation level, regression analysis revealed that climate change anxiety significantly negatively predicted psychological well-being ($\beta = -.26, p = .002$). The significant regression coefficient indicates that climate change anxiety uniquely contributes to explaining psychological well-being after accounting for other variables in the model, even though the bivariate association was relatively weak. Therefore the hypothesis was supported. This indicates that higher climate-related anxiety is associated with lower psychological well-being among university students.

Climate change anxiety generates persistent feelings of uncertainty, fear, helplessness, and concern about future environmental conditions. University students are frequently exposed to information about climate crises through social media, educational settings, and news outlets, which may increase worry about environmental degradation and its consequences. Continuous concern about an uncertain future can negatively affect emotional stability, optimism, and life satisfaction, thereby reducing psychological well-being. Furthermore, climate change is often perceived as a global issue beyond individual control, which may intensify feelings of helplessness and psychological distress.

The present findings are consistent with previous research suggesting that climate change anxiety functions as a psychological stressor associated with fear, uncertainty, and emotional distress (Hickman et al.; Clayton & Karazsia; Cunsolo & Ellis). Collectively, these studies indicate that persistent environmental concerns can reduce individuals' psychological well-being.

The second hypothesis stated that coping strategies positively predict psychological well-being, and the findings showed a significant positive relationship between coping strategies and psychological well-being ($r = .581, p < .01$), while regression analysis further confirmed that coping strategies significantly and positively predicted psychological well-being ($\beta = .63, p < .001$), therefore, the hypothesis was supported. Coping strategies enable individuals to manage stressful situations effectively and reduce the negative impact of psychological distress. Students who use adaptive coping methods such as problem-solving, positive reframing, acceptance, and seeking social support are better able to regulate emotions and maintain psychological balance. Effective coping increases feelings of control, competence, and resilience, which contribute positively to psychological well-being. As a result, students who engage in adaptive coping are more likely to experience positive emotions, emotional stability, and overall life satisfaction. These results suggest that individuals who use adaptive coping strategies experience better psychological well-being, emotional stability, and resilience, and this is strongly supported by Lazarus and Folkman's transactional theory of stress and coping, which explains that effective coping helps individuals manage stress and maintain psychological balance, while Folkman and Moskowitz found that positive coping strategies such as optimism, acceptance, emotional expression, and social support significantly enhance well-being, and Reser and Swim also reported that adaptive coping responses toward climate-related stress reduce emotional burden and improve psychological adjustment, highlighting coping strategies as a strong protective factor for mental health.

The third hypothesis stated that climate change anxiety significantly relates to coping strategies, and the findings revealed a weak positive relationship between climate change anxiety and coping strategies ($r = .187$); however, this relationship was statistically non-significant ($p > .05$), therefore the hypothesis was rejected. Despite the non-significant result, the positive direction of the relationship suggests that students experiencing greater climate-related anxiety may attempt to manage their concerns through various coping strategies. Climate anxiety may motivate individuals to seek information, discuss environmental issues, engage in problem-solving, or participate in environmentally responsible behaviors. However, the weak and non-significant relationship indicates that not all students possess adequate coping resources or climate-specific coping skills. Some individuals may respond adaptively to climate anxiety, while others may react with avoidance, helplessness, or emotional withdrawal, which may weaken the overall association between climate anxiety and coping strategies. Students experiencing climate anxiety may attempt to cope with their concerns; however, these coping efforts may not be sufficiently strong or consistent to produce a statistically significant relationship and this finding is partially supported by Ojala, who found that individuals may use meaning-focused coping such as hope and positive environmental action in response to climate anxiety, while Verplanken and Roy reported that environmental concern may motivate adaptive coping behaviors and pro-environmental actions, and Pihkala explained that eco-anxiety can lead to both adaptive and maladaptive coping depending on emotional resources and social support; therefore, the non-significant relationship in the present study may reflect limited coping resources or lack of specific climate-related coping skills among students.

Furthermore, the overall regression model showed that climate change anxiety and coping strategies together significantly predicted psychological well-being, $F(2, 97) = 32.77, p < .001$, and explained 39.1% of the variance ($R^2 = .391$), indicating predictive explanatory power of the model. This finding suggests that psychological well-being is influenced by both risk factors and protective factors. Climate change anxiety acts as a psychological risk factor by increasing worry, uncertainty, and emotional distress, whereas coping strategies serve as a protective factor by helping individuals manage stress and maintain emotional balance. Students who possess stronger coping skills may be better able to reduce the negative psychological effects of climate-related concerns. Therefore, the combined influence of climate change anxiety and coping strategies provides a more comprehensive explanation of students' psychological well-being than either variable alone. Climate change anxiety negatively predicted psychological well-being while coping strategies positively predicted it. Overall, the findings suggest that climate change anxiety acts as a psychological risk factor that reduces well-being, whereas coping strategies function as a protective factor that enhances resilience and psychological adjustment among university students. Therefore, universities should focus on developing awareness programs, counseling services, and stress management interventions to help students effectively manage climate-related anxiety and improve their psychological well-being.

Additionally, the scatterplot of standardized residuals against standardized predicted values for Psychological Well-Being (PWTot) showed a random distribution of points around the horizontal line without any clear pattern. This indicates that the assumptions of linearity and homoscedasticity were satisfied, confirming the appropriateness and robustness of the regression model used in the study.

Implications of the Study

The findings of the present study have important theoretical and practical implications. The study highlights the growing psychological impact of climate change anxiety among university students living

in environmentally vulnerable areas. Educational institutions and mental health professionals should develop awareness and intervention programs to help students manage climate-related anxiety. The findings also emphasize the importance of adaptive coping strategies in maintaining psychological well-being. Universities should encourage stress management programs, counseling services, resilience-building activities, and psychological support systems to promote students' mental health. Furthermore, the study contributes to the existing literature on climate psychology by providing evidence regarding the relationship between climate change anxiety, coping strategies, and psychological well-being among university students in Pakistan.

Limitations of the Study

Despite the rigor of the research design, several limitations should be acknowledged. First, the cross-sectional nature of the study limits the ability to establish temporal relationships or causal inferences. Although associations between climate change anxiety, coping strategies, and psychological well-being were identified, the direction of causality could not be determined.

Second, the study relied on self-report questionnaires, which may have introduced response biases, including social desirability bias and recall bias. Participants may have over reported adaptive coping strategies or underreported negative emotional states, potentially affecting the accuracy of the findings. Third, the relatively small sample size ($N = 100$) limits the statistical power of the study and may reduce the representativeness of the findings. A larger sample would provide greater confidence in the stability and generalizability of the results and allow for more robust analyses across demographic subgroups.

Fourth, the use of purposive sampling from selected flood-prone regions, such as Buner and Swat, may limit the generalizability of the findings to the broader university student population, particularly students from non-climate-vulnerable areas or different geographical contexts. Finally, the data were collected at a single point in time; therefore, the study did not capture temporal or seasonal variations in psychological distress and coping responses, which may fluctuate during periods of active flooding compared to relatively stable environmental conditions.

Recommendations

Based on the findings of the present study, the following recommendations are suggested:

Universities should organize awareness programs and workshops to educate students about climate change anxiety and its psychological effects. Such programs may help students better understand and manage environmental stressors.

Educational institutions should provide counseling and psychological support services for students experiencing stress and anxiety related to climate change and environmental threats such as recurrent flooding.

Universities should promote adaptive coping strategies among students through stress management training, resilience-building activities, mindfulness practices, and emotional support programs to enhance psychological well-being.

Parents, teachers, and mental health professionals should encourage positive coping behaviors such as problem-solving, emotional expression, social support seeking, and healthy lifestyle practices among students.

Future researchers should conduct studies with larger and more diverse samples from different universities and regions to improve the generalizability of findings.

Future studies may examine additional psychological variables such as resilience, depression, stress, social support, and emotional intelligence in relation to climate change anxiety and psychological well-being.

Longitudinal and qualitative studies are recommended to gain a deeper understanding of how climate change anxiety affects students' mental health over time.

Government and educational authorities should develop policies and intervention programs aimed at reducing the psychological impact of environmental threats on young people living in climate-vulnerable areas.

Conclusion

Climate change anxiety represents a significant and emerging psychological concern among university students, particularly in climate-vulnerable regions. As young adults navigate academic and developmental transitions in the context of environmental uncertainty, understanding the role of coping strategies in shaping psychological well-being becomes increasingly important.

This study highlights the importance of examining climate change anxiety alongside adaptive and maladaptive coping mechanisms to better understand their combined influence on psychological well-being. By addressing gaps in existing literature, particularly in flood-affected populations, the study contributes to a more comprehensive understanding of psychological adaptation to environmental stress.

The findings may provide useful insights for developing evidence-based mental health interventions within higher education settings. In particular, universities can use this knowledge to design targeted support systems that enhance resilience and promote adaptive coping, enabling students to manage climate-related distress more effectively and maintain psychological well-being.

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